Feb. 7, 1928. 1,658,455

H. METZECH ET AL

SOLAR HEATER

Filed March 13, 1926

Fig. 1

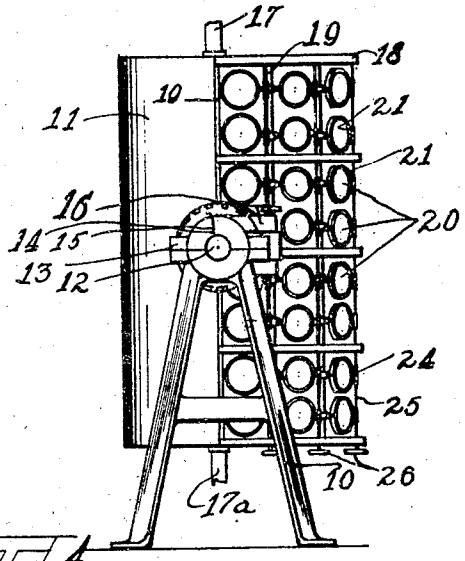


Fig. 2

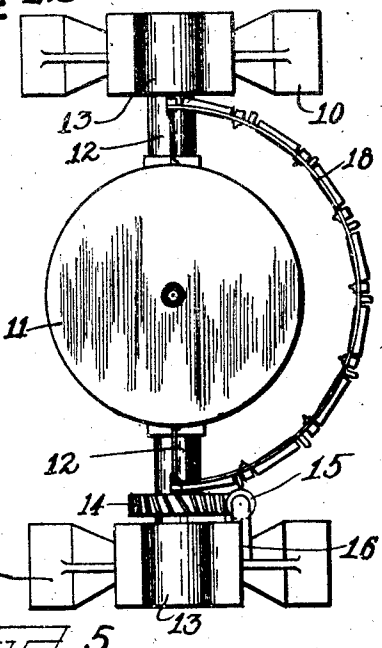


Fig. 4

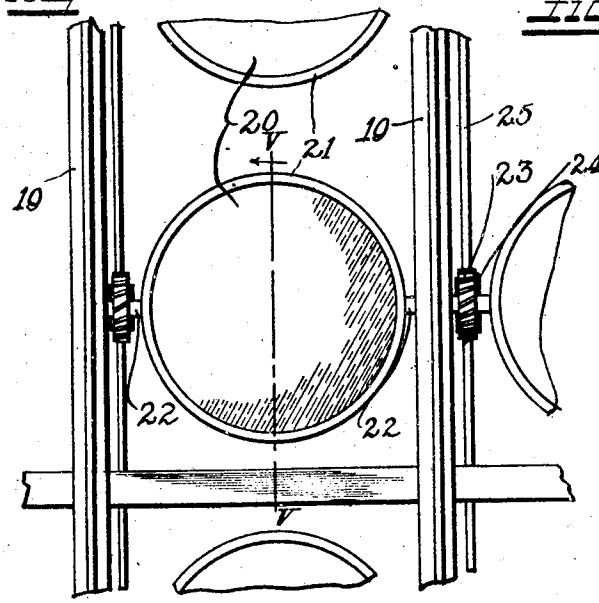


Fig. 5

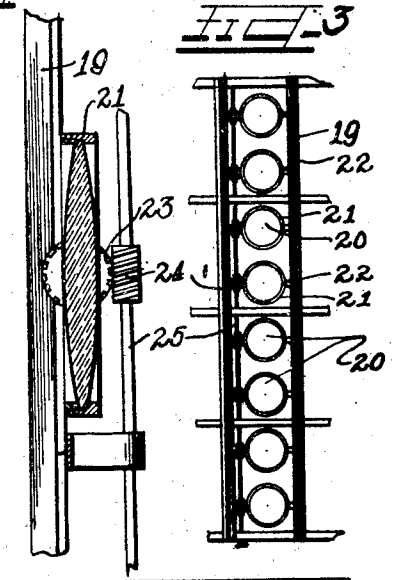


Fig. 3

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Patented Feb. 7, 1928. 1,658,455

UNITED STATES PATENT OFFICE.

HERMAN METZECH AND FLORENCE C. WERNER, OF CHICAGO, ILLINOIS.

SOLAR HEATER.

Application filed March 13, 1926. Serial No. 94,436.

This invention relates to solar heaters and is designed to provide an apparatus for the heating of water or other fluids which will utilize the rays of the sun for that purpose and will be adjustable to the position of the sun whereby a maximum efficiency may be attained.

With the above and other objects in view as will be apparent, this invention consists in the construction, combination and arrangement of parts all as hereinafter more fully described, claimed and illustrated in the accompanying drawings wherein:

Figure 1 is an elevation of a heater constructed in accordance with the present invention;

Figure 2 is a plan view thereof;

Figure 3 is an elevation of one row of lenses illustrating the mounting thereof;

Figure 4 is an enlargement of one lens illustrating the supporting means therefor and the means for adjusting the lens so as to vary its position;

Figure 5 is a vertical section taken along line V—V of Figure 4.

The present invention is designed to mount a boiler or tank so that it may be oscillated or moved to various positions and there held to receive the full effect of the rays of the sun.

A portion of the surface of this boiler or tank is surrounded by a plurality or series of rows of lenses which are adjustably mounted to receive and concentrate the rays of the sun upon the adjoining wall of the boiler or tank thereby heating the contents thereof.

In carrying out the present invention, frames or upright supports 10 are provided to support a cylindrical tank or boiler 11 by means of the hollow trunnions 12 on each side thereof, operating in the bearings 13 at the top of said frames or upright supports. One of the trunnions 12 is provided with a worm wheel 14 which meshes with a worm 15 mounted on the arm 16 carried by the adjoining frame or upright support 10. The worm 15 is rotated by a suitable handle for the adjustment of the tank or boiler to the position best suited to the reception and concentration of the rays of the sun.

An intake pipe 17^a enters the lower end of the tank 11 to supply a fluid to the interior of the tank or boiler 11 while an outlet pipe 17 passes through the upper end of said tank for the removal of the heated fluid from the said boiler or tank 11.

A frame 18 is mounted on the trunnions 12 and is adapted to move with the trunnions and the tank or boiler 11. This frame is coextensive both as to width and length relative to the adjacent portion of the exposed wall surface of the boiler or tank 11 and is removed therefrom a distance sufficiently great to allow a proper concentration of the rays of the sun upon the tank wall by the lenses carried by said frame.

The frame 18 is made up of a plurality of horizontal frame pieces and a series of transverse vertical pieces 19. Between each pair of vertical pieces 19 is mounted a series or row of lenses 20; each lens being carried in a frame 21 mounted on studs 22 journalled in the vertical pieces 19. One of the studs 22 of each lens has a worm gear 23 fixed thereto which cooperates with a worm 24 carried by a shaft 25 parallel to and mounted on the adjacent vertical frame pieces 19. The shaft 25 of one vertical row of lenses may be rotated by a suitable handle 26 to adjust all of the lenses 20 in that particular row simultaneously to the same angle. Thus each row of lenses 20 is adjustable independently of every other row and all of the lenses may thus be adjusted to properly receive and concentrate the sun's rays upon the wall of the tank or boiler 11.

It will be observed that after the apparatus has been properly adjusted, that the heat waves from the sun will be concentrated upon a portion of the exposed surface of the tank wall irrespective of the position of the sun.

We are aware that many changes may be made, and numerous details of construction may be varied through a wide range without departing from the principles of this invention, and we therefore do not propose limiting the patent granted hereon otherwise than as necessitated by the prior art.

We claim as our invention:

1. In combination, a tank, a frame cooperating with the wall thereof, a plurality of rows of lenses mounted in said frame, pivotal mountings for each of said lenses, a shaft adjoining each row of lenses, and con-

nections between the lenses of each row and the shaft corresponding to that row whereby the rotation of said shaft adjusts said row of lenses.

2. In combination, a tank, a frame cooperating with the wall thereof, a plurality of rows of lenses mounted in said frame, pivotal mountings for each of said lenses, and means for simultaneously adjusting the lenses of each row on their pivots.

In testimony whereof, we have hereunto subscribed our names.

HERMAN METZECH.
FLORENCE C. WERNER.